

SITE INSPECTION WORKSHEETS

1

CERCLIS IDENTIFICATION NUMBER

STATE <u>NJ</u>	SITE NUMBER <u>D002344190</u>
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SITE LOCATION

SITE NAME: Legal, common or descriptive name of site

U.S. Bronze Powders

STREET ADDRESS, ROUTE or SPECIFIC LOCATION IDENTIFIER

Route 202 N

CITY Baritan Township

STATE <u>NJ</u>	ZIP CODE <u>08822</u>	TELEPHONE <u>(908) 782-5454</u>
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COORDINATES: LATITUDE and LONGITUDE

40° 31' 21" 74° 54' 33"

TOWNSHIP, RANGE, and SECTION Hunterdon County

OWNER/OPERATOR IDENTIFICATION

OWNER U.S. Bronze Powders

OPERATOR U.S. Bronze Powders

OWNER ADDRESS Route 202 N

OPERATOR ADDRESS Route 202 N

CITY Baritan Twp.

CITY Baritan Twp.

STATE <u>NJ</u>	ZIP CODE <u>08822</u>	TELEPHONE <u>(908) 782-5454</u>
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STATE <u>NJ</u>	ZIP CODE <u>08822</u>	TELEPHONE <u>(908) 782-5454</u>
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TYPE OF OWNERSHIP

- ☒ PRIVATE
- ☐ FEDERAL: Agency name _____
- ☐ STATE
- ☐ COUNTY
- ☐ MUNICIPAL
- ☐ OTHER: _____
- ☐ NOT SPECIFIED

OWNER/OPERATOR NOTIFICATION ON FILE

- ☒ NONE
- ☐ CERCLA 103 C, UNCONTROLLED WASTE SITE
DATE: _____
- ☐ RCRA 3001
DATE: _____

SITE STATUS

- ☒ ACTIVE
- ☐ INACTIVE
- ☐ UNKNOWN

YEARS OF OPERATION

BEGINNING YEAR: 1957
ENDING YEAR: Present
☐ UNKNOWN

APPROXIMATE SIZE OF SITE

22 acres

SITE EVALUATION

AGENCY / ORGANIZATION NTDEPE / Bureau of Field Operations - Site Assessment

INVESTIGATOR Donna J. van Veldhuisen

CONTACT Kenneth J. Kloo

ADDRESS 300 Horizon Center

TELEPHONE (609) 584-4280

DATE June 10, 1992

278090



Site Name:

Date:

GENERAL INFORMATION

2

Site Description and Operational History:

Until 1980 U.S. Bronze made aluminum into powder and recovered copper from large plates. The recovery process involved copper-coated solid plates being placed through a series of twelve vats. The vats contained a mixture of copper sulfate and sulfuric acid which drew off the copper. Electrical charges added to various vats also aided in removing the copper. A 3,000-gallon aboveground storage tank was used to hold waste copper sulfate solution until it was removed off site.

Currently U.S. Bronze manufactures copper and brass flakes by atomization and ball milling. In the foundry building the furnace melts the copper and copper alloys. The resulting product is then ground into powder. Twenty-three ball mills flatten the grains into flakes.

Wastes generated on site include vacuum dust which is removed from site and reused by another company. Laboratory wastes are placed in 55-gallon drums and removed from site by Safety-Kleen, approximately one drum in 90 days. These wastes are classified as F003 and F005 wastes (spent non-halogenated solvents). Ink producing process waste is stored in 55-gallon drums prior to removal from the site.

Three 275-gallon aboveground storage tanks within a contained area are used to store waste oil. Three types of oil, synthetic, motor and hydraulic, are generated. Most of the oil is generated from various machinery and working equipment. Safety-Kleen waste cleaner, generated since 1986, is recycled. It is not known what was used prior to 1986. Both the waste oil and waste cleaner are manifested off site within 90 days.

One 12,000-gallon underground fuel oil tank is present on site. The tank is located near the gate to the facility and is monitored. A 550-gallon underground diesel tank is located near the well pumphouse.

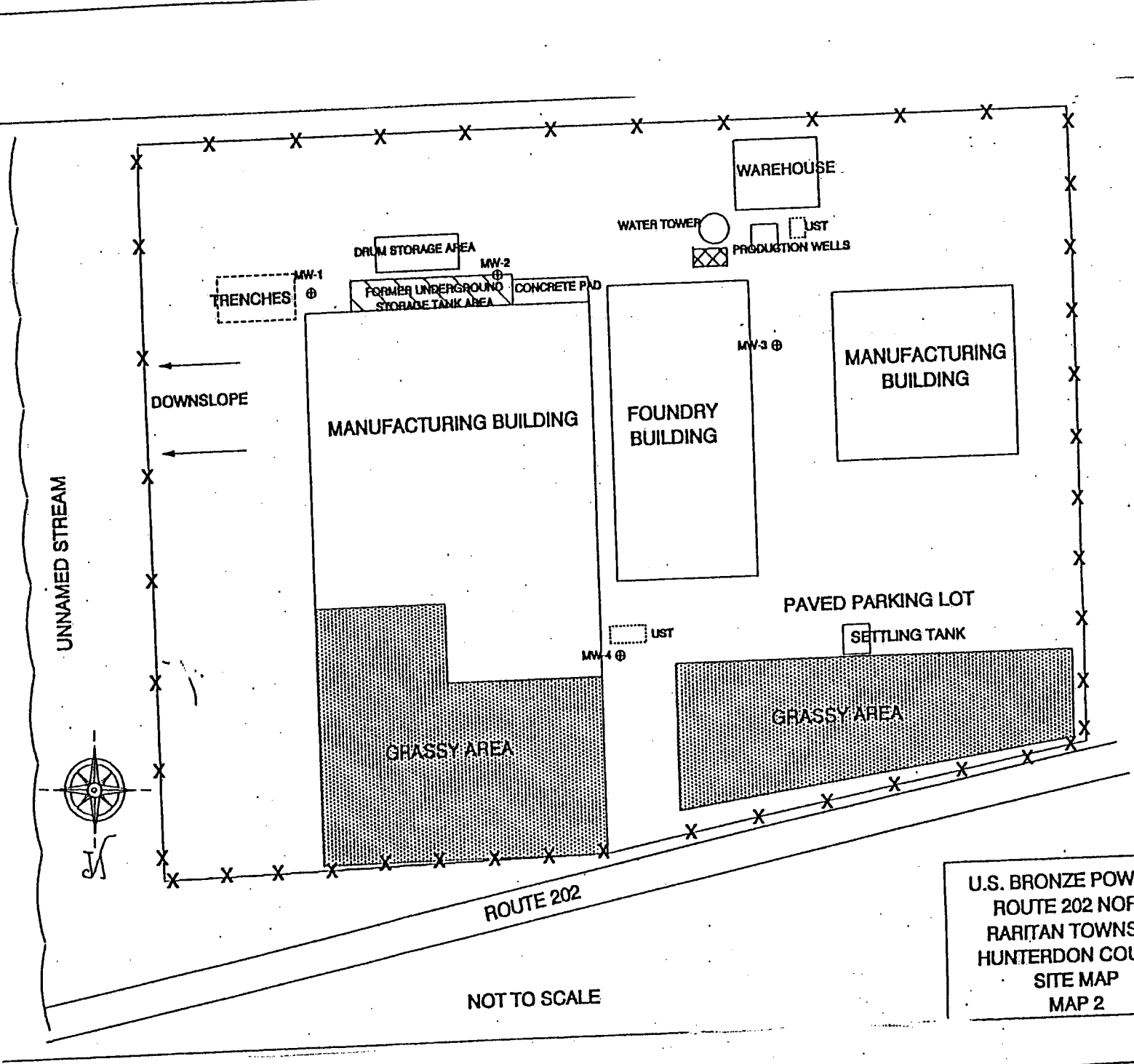
Four underground mineral spirits storage tanks south of the main building were excavated in 1986. The size of the tanks were two 8,000-gallon, one 4,000-gallon and one 1,000-gallon. Soil samples collected in the area of the tanks indicated contamination with mineral spirits.

NOV 6 1981

Sketch:

GENERAL INFORMATION (continued)

Site Name:
Date:



U.S. BRONZE POWDERS
ROUTE 202 NORTH
RARITAN TOWNSHIP
HUNTERDON COUNTY
SITE MAP
MAP 2

Site Name:

Date:

GENERAL INFORMATION (continued)

4

Source Descriptions:

4 UGSTs - 21,000 gallons

3 AGSTs - 875 gallons

10 Drums

Ball Mill Area - 1 acre contaminated soil

Hazardous Waste Quantity (HWQ) Calculations:

(See SI Tables 1 and 2)

$$\text{Tanks } \frac{21,875}{500} = 43.75$$

$$\text{Drums } \frac{10}{10} = 1$$

44.75

$$\text{Soil} = \frac{1}{0.78} = 1.28$$

46.03

HWQ =

10

Attach additional pages, if necessary.

Site Name:

Date:

SI TABLE 1: HAZARDOUS WASTE QUANTITY (HWQ) SCORES FOR SINGLE SOURCE SITES AND FORMULAS FOR MULTIPLE SOURCE SITES

5

SOURCE TYPE	SINGLE SOURCE SITES (assigned HWQ scores)				MULTIPLE SOURCE SITES
	HWQ = 10	HWQ = 100	HWQ = 10,000	HWQ = 1,000,000	Formula for Assigning Source WQ Values
N/A	≤ 100 lbs	> 100 to 10,000 lbs	> 10,000 to 1,000,000 lbs	> 1,000,000 lbs	$lbs + 1$
N/A	≤ 500,000 lbs	> 500,000 to 50 million lbs	> 50 million to 5 billion lbs	> 5 billion lbs	$lbs + 5,000$
Landfill	≤ 6.75 million ft ³ ≤ 250,000 yd ³	> 6.75 million to 675 million ft ³ > 250,000 to 25 million yd ³	> 675 million to 67.5 billion ft ³ > 25 million to 2.5 billion yd ³	> 67.5 billion ft ³ > 2.5 billion yd ³	$ft^3 + 67,500$ $yd^3 + 2,500$
Surface impoundment	≤ 6,750 ft ³ ≤ 250 yd ³	> 6,750 to 675,000 ft ³ > 250 to 25,000 yd ³	> 675,000 to 67.5 million ft ³ > 25,000 to 2.5 million yd ³	> 67.5 million ft ³ > 2.5 million yd ³	$ft^3 + 67.5$ $yd^3 + 2.5$
Drums	≤ 1,000 drums	> 1,000 to 100,000 drums	> 100,000 to 10 million drums	> 10 million drums	$drums + 10$
Tanks and non-drum containers	≤ 50,000 gallons	> 50,000 to 5 million gallons	> 5 million to 500 million gallons	> 500 million gallons	$gallons + 500$
Contaminated soil	≤ 6.75 million ft ³ ≤ 250,000 yd ³	> 6.75 million to 675 million ft ³ > 250,000 to 25 million yd ³	> 675 million to 67.5 billion ft ³ > 25 million to 2.5 billion yd ³	> 67.5 billion ft ³ > 2.5 billion yd ³	$ft^3 + 67,500$ $yd^3 + 2,500$
Pile	≤ 6,750 ft ³ ≤ 250 yd ³	> 6,750 to 675,000 ft ³ > 250 to 25,000 yd ³	> 675,000 to 67.5 million ft ³ > 25,000 to 2.5 million yd ³	> 67.5 million ft ³ > 2.5 million yd ³	$ft^3 + 67.5$ $yd^3 + 2.5$
Landfill	≤ 340,000 ft ² ≤ 7.8 acres	> 340,000 to 34 million ft ² > 7.8 to 780 acres	> 34 million to 3.4 billion ft ² > 780 to 78,000 acres	> 3.4 billion ft ² > 78,000 acres	$ft^2 + 3,400$ $acres + 0.078$
Surface impoundment	≤ 1,300 ft ² ≤ 0.029 acres	> 1,300 to 130,000 ft ² > 0.029 to 2.9 acres	> 130,000 to 13 million ft ² > 2.9 to 290 acres	> 13 million ft ² > 290 acres	$ft^2 + 13$ $acres + 0.00029$
Contaminated soil	≤ 3.4 million ft ² ≤ 78 acres	> 3.4 million to 340 million ft ² > 78 to 7,800 acres	> 340 million to 34 billion ft ² > 7,800 to 780,000 acres	> 34 billion ft ² > 780,000 acres	$ft^2 + 34,000$ $acres + 0.78$
Pile*	≤ 1,300 ft ² ≤ 0.029 acres	> 1,300 to 130,000 ft ² > 0.029 to 2.9 acres	> 130,000 to 13 million ft ² > 2.9 to 290 acres	> 13 million ft ² > 290 acres	$ft^2 + 13$ $acres + 0.00029$
Land treatment	≤ 27,000 ft ² ≤ 0.62 acres	> 27,000 to 2.7 million ft ² > 0.62 to 62 acres	> 2.7 million to 270 million ft ² > 62 to 6,200 acres	> 270 million ft ² > 6,200 acres	$ft^2 + 270$ $acres + 0.0062$

ton = 2,000 lbs = 1 yd³ = 4 drums = 200 gallons
Use area of land surface under pile, not surface area of pile.

SI TABLE 2: HWQ SCORES FOR MULTIPLE SOURCE SITES

Site WQ Total	HWQ Score
> 0 to 100	10
> 100 to 10,000	100
> 10,000 to 1 million	10,000

DRAFT

0.001

Copy and attach additional pages if necessary.

Source ID:Source ID:

**Highest Values
(All Sources)**

2065

AUG 6 1991

Site Name:

Date:

GROUND WATER PATHWAY
GROUND WATER USE DESCRIPTION

7

Describe Ground Water Use Within 4 miles of the Site:

Provide generalized stratigraphy; information on aquifers, municipal and private wells)

U.S. Bronze is underlain by 1 to 5 feet of surficial deposits consisting of red to brown silty clay with sand. Beneath these deposits is the Triassic age Brunswick Shale. The shale is a red argillaceous shale with local beds of fine-grained red sandstone, siltstone and black, gray or greenish shale. The Brunswick Shale is estimated to be 6,000 to 9,000 feet thick and is highly fractured. Groundwater is 50 to 100 feet deep and wells in the area of the site draw from this formation. Groundwater flow direction is not known, however, the facility is on a hill which may cause groundwater to flow radially away from the site.

U.S. Bronze operates two production wells, both 500 feet deep, on site. Trace levels of copper were detected in the wells in 1988. These wells are still used for the facility's industrial and potable water supply.

The Flemington Water Department operates four wells within 4 miles of the site. Two wells are 0.8 mile from the site, one well is 1.2 miles and the fourth well is 1.9 miles from the site. The wells are 350 to 510 feet deep and are screened in the Brunswick Formation. Approximately 4,240 residents are served by these wells in Flemington Borough and Raritan Township.

Residents in Raritan Township, Readington Township, Delaware Township, East Amwell Township and Hillsborough Township within 4 miles of the site are served by private wells. The nearest well is approximately 400 feet east of the site. Approximately 19,100 residents have private wells within 4 miles. The Hunterdon Medical Center operates four wells 2 miles from the site which serve approximately 600 patients and staff.

Show calculations of ground water drinking water populations:

Flemington Boro - 2 wells
2 wells

0.8 mile = 2,120
1-2 miles = 2,120

Private wells:
 $0 - \frac{1}{4} = 3$
 $\frac{1}{4} - \frac{1}{2} = 212$
 $\frac{1}{2} - 1 = 1,000$
 $1 - 2 = 3,525$
 $2 - 3 = 5,769$
 $3 - 4 = 10,576$

SI TABLE 4: GROUND WATER OBSERVED RELEASE SUBSTANCES

Sample ID	Hazardous Substance	Toxicity/Mobility
MW-2	B/N 647 ppm	
MW-2	1,1-dichloroethane 19ppb	$1 \times 1 = 1$
MW-3	1,1-dichloroethane 200ppb	$1 \times 1 = 1$
MW-3	ethylbenzene 57ppb	$1 \times 1 = 1$
MW-3	1,1,1-trichloroethane 190ppb	$1 \times 1 = 1$
MW-3	m-xylene 110ppb	$1 \times 1 = 1$
MW-3	p,o-xylene 53ppb	$1 \times 1 = 1$
MW-3	bis(2-ethylhexyl)phthalate 14ppb	$1 \times 1 = 1$
MW-3	naphthalene 110ppb	$1,000 \times 1 = 1,000$
Well #2	chloroform 1.7ppb	$100 \times 1 = 100$
	Highest Toxicity/Mobility	1,000

Reference

☐ SAx
☐ Fed Reg.
☐ SI

SI TABLE 5: GROUND WATER ACTUAL CONTAMINATION TARGETS

Well ID: _____ Level I _____ Level II _____ Population Served _____

Sample ID	Hazardous Substance	Concentration (ug/L)	Benchmark Concentration (MCL or MCLG)	Percent of Benchmark	Cancer Risk Concentration	Percent of Cancer Risk Concentration	Reference Dose	Percent of Reference Dose
Highest Percent					Sum of Percents		Sum of Percents	

Well ID: _____ Level I _____ Level II _____ Population Served _____

Sample ID	Hazardous Substance	Concentration (ug/L)	Benchmark Concentration (MCL or MCLG)	Percent of Benchmark	Cancer Risk Concentration	Percent of Cancer Risk Concentration	Reference Dose	Percent of Reference Dose
Highest Percent					Sum of Percents		Sum of Percents	

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 10/1/01

Site Name:
Date:

GROUND WATER PATHWAY WORKSHEET

9

LIKELIHOOD OF RELEASE

Score Data Type References

1. OBSERVED RELEASE: If sampling data or direct observation support a release to ground water, assign a score of 550. Record observed release substances on SI Table 4.
2. NO OBSERVED RELEASE: If sampling data do not support a release to ground water, and the site is in karst terrain or the depth to aquifer is 70 feet or less, assign a score of 500; otherwise, assign a score of 340.

LR = 550

TARGETS

Are any wells part of a blended system? Yes ☒ No ☐
If yes, attach a page to show apportionment calculations.

3. ACTUAL CONTAMINATION TARGETS: If analytical evidence indicates that any drinking-water well has been exposed to a hazardous substance from the site, calculate the factor score based on the number of people served by using SI Table 5.

Level I: $\frac{0}{0}$ people $\times 10 = \frac{0}{0}$
Level II: $\frac{0}{0}$ people $\times 1 = \frac{0}{0}$ Total = 0 H

4. POTENTIAL CONTAMINATION TARGETS: Determine the number of people served by drinking-water wells that are not exposed to a hazardous substance from the site; record the population for each distance category in SI Table 6a or 6b, and assign the total population score.

471 E

5. NEAREST WELL: Assign a score of 50 for any Level I Actual Contamination Targets. Assign a score of 45 if there are Level II targets but no Level I targets. If no Actual Contamination Targets exist, assign the Nearest Well score from SI Table 6a or 6b. If no drinking-water wells exist within 4 miles, assign 0.

20 H

6. WELLHEAD PROTECTION AREA (WHPA): If any source lies within or above a WHPA, or if a ground water observed release has occurred within a WHPA, assign a score of 20; assign 5 if neither condition applies but a WHPA is within 4 miles; otherwise assign 0.

0 E

7. RESOURCES

5 H

T = 496

SI TABLE 6: VALUES FOR POTENTIAL CONTAMINATION GROUND WATER TARGET POPULATIONS

SI Table 6a: Non-Karst Aquifers

Distance from Site	Population	Nearest Well (choose highest)	Population Served by Wells Within Distance Category												Population Value	Ref.
			1 to 10	11 to 30	31 to 100	101 to 300	301 to 1,000	1,001 to 3,000	3,001 to 10,000	10,001 to 30,000	30,001 to 100,000	100,001 to 300,000	300,001 to 1,000,000	1,000,001 to 3,000,000		
0 to ¼ mile	<u>3</u>	<u>20</u>	<u>1</u>	2	5	16	52	163	521	1,633	5,214	16,325	52,136	163,246	<u>1</u>	—
> ¼ to ½ mile	<u>212</u>	18	1	1	3	<u>10</u>	32	101	323	1,012	3,233	10,121	32,324	101,212	<u>10</u>	—
> ½ to 1 mile	<u>3,120</u>	9	1	1	2	5	17	52	<u>167</u>	522	1,668	5,224	16,684	52,239	<u>167</u>	—
> 1 to 2 miles	<u>5,645</u>	5	1	1	1	3	9	29	<u>94</u>	294	939	2,938	9,385	29,384	<u>94</u>	—
> 2 to 3 miles	<u>5,769</u>	3	1	1	1	2	7	21	<u>68</u>	212	678	2,122	6,777	21,222	<u>68</u>	—
> 3 to 4 miles	<u>10,576</u>	2	1	1	1	1	4	13	42	<u>131</u>	417	1,306	4,171	13,060	<u>131</u>	—
Nearest Well = <u>20</u>			Score = <u>471</u>													

SI Table 6b: Karst Aquifers

Distance from Site	Population	Nearest Well (use 20 for karst)	Population Served by Wells Within Distance Category												Population Value	Ref.
			1 to 10	11 to 30	31 to 100	101 to 300	301 to 1,000	1,001 to 3,000	3,001 to 10,000	10,001 to 30,000	30,001 to 100,000	100,001 to 300,000	300,001 to 1,000,000	1,000,001 to 3,000,000		
0 to ¼ mile	—	20	1	2	5	16	52	163	521	1,633	5,214	16,325	52,136	163,246	—	—
> ¼ to ½ mile	—	20	1	1	3	10	32	101	323	1,012	3,233	10,121	32,324	101,212	—	—
> ½ to 1 mile	—	20	1	1	3	8	26	82	261	816	2,607	8,162	26,068	81,623	—	—
> 1 to 2 miles	—	20	1	1	3	8	26	82	261	816	2,607	8,162	26,068	81,623	—	—
> 2 to 3 miles	—	20	1	1	3	8	26	82	261	816	2,607	8,162	26,068	81,623	—	—
> 3 to 4 miles	—	20	1	1	3	8	26	82	261	816	2,607	8,162	26,068	81,623	—	—
Nearest Well =			Score =													

Site Name:

Date:

GROUND WATER PATHWAY (concluded)

11

WASTE CHARACTERISTICS	Score	Data Type	References																								
8. If any Actual Contamination Targets exist for the ground water pathway, assign the hazardous waste quantity score calculated on page 4, or a score of 100, whichever is GREATER; if no Actual Contamination Targets exist, assign the hazardous waste quantity score calculated on page 4.	10																										
9. Assign the highest ground water toxicity/mobility value from SI Table 3 or 4.	1,000																										
10. Multiply the ground water toxicity/mobility and waste quantity scores. Assign the Waste Characteristics score from the table below:	<table border="1"> <thead> <tr> <th>Product</th> <th>WC Score</th> <th>Product</th> <th>WC Score</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>10,000 to <1E+0</td> <td>10</td> </tr> <tr> <td>>0 to <10</td> <td>1</td> <td>1E+05 to <1E+0</td> <td>18</td> </tr> <tr> <td>10 to <100</td> <td>2</td> <td>1E+06 to <1E+0</td> <td>32</td> </tr> <tr> <td>100 to <1,000</td> <td>3</td> <td>1E+07 to <1E+0</td> <td>56</td> </tr> <tr> <td>1,000 to <10,000</td> <td>6</td> <td>1E+08 or greater</td> <td>100</td> </tr> </tbody> </table>			Product	WC Score	Product	WC Score	0	0	10,000 to <1E+0	10	>0 to <10	1	1E+05 to <1E+0	18	10 to <100	2	1E+06 to <1E+0	32	100 to <1,000	3	1E+07 to <1E+0	56	1,000 to <10,000	6	1E+08 or greater	100
Product	WC Score	Product	WC Score																								
0	0	10,000 to <1E+0	10																								
>0 to <10	1	1E+05 to <1E+0	18																								
10 to <100	2	1E+06 to <1E+0	32																								
100 to <1,000	3	1E+07 to <1E+0	56																								
1,000 to <10,000	6	1E+08 or greater	100																								
	WC = 10																										

GROUND WATER PATHWAY SCORE:

$$\frac{LR \times T \times WC}{82,500} =$$

33.07

Site Name:

Date:

**SURFACE WATER PATHWAY
MIGRATION ROUTE SKETCH**

12

Provide a Sketch of the Surface Water Migration Route:
(Include runoff route, probable point of entry, 15-mile target distance limit, sample locations, intakes, fisheries,
sensitive environments)

Narrative

ABLE 7: SURFACE WATER OBSERVED RELEASE SUBSTANCES

Sample ID	Hazardous Substance	Toxicity/ Persistence	Toxicity/ Persistence/ Bioaccumulation	Ecotoxicity/ Persistence/Eco- bioaccumulation	Reference
5/28 SED	Copper 95.4 ppm	100	5×10^6	5×10^7	
Highest Values		100	5×10^6	5×10^7	

TABLE 8: SURFACE WATER DRINKING WATER ACTUAL CONTAMINATION TARGETS

Sample ID: _____ Sample Type: _____ Level I _____ Level II _____ Population Served _____

Sample ID	Hazardous Substance	Concentration (ug/L)	Benchmark Concentration (MCL or MCLG)	Percent of Benchmark	Cancer Risk Concentration	Percent of Cancer Risk Concentration	Reference Dose	Percent of Reference Dose
Highest Percent					Sum of Percents		Sum of Percents	

Sample ID: _____ Sample Type: _____ Level I _____ Level II _____ Population Served _____

Sample ID	Hazardous Substance	Concentration (ug/L)	Benchmark Concentration (MCL or MCLG)	Percent of Benchmark	Cancer Risk Concentration	Percent of Cancer Risk Concentration	Reference Dose	Percent of Reference Dose
Highest Percent					Sum of Percents		Sum of Percents	

Site Name:
Date:

SURFACE WATER PATHWAY
LIKELIHOOD OF RELEASE AND DRINKING WATER THREAT WORKSHEET

14

LIKELIHOOD OF RELEASE	Score	Data Type	References
OBSERVED RELEASE: If sampling data or direct observation support a release to surface water, assign a score of 550. Record observed release substances on SI Table 7.	550		
NO OBSERVED RELEASE: If sampling data do not support a release to surface water, use the table below to assign a score based on distance to surface water and flood frequency.			
Distance to surface water <2500 feet	500		
Distance to surface water >2500 feet, and			
Site in annual or 10-yr floodplain	500		
Site in 100-yr floodplain	400		
Site in 500-yr floodplain	300		
Site outside 500-yr floodplain	100		
LR =	550		

DRINKING WATER THREAT TARGETS

Record the water body type, flow (if applicable), and number of people served by each drinking-water intake within the target distance limit. If there is no drinking-water intake within the target distance limit, assign 0 to factors 4, 5, and 6.																			
<table border="1"><thead><tr><th>Intake Name</th><th>Water Body Type</th><th>Flow</th><th>People Served</th></tr></thead><tbody><tr><td></td><td></td><td>cfs</td><td></td></tr><tr><td></td><td></td><td>cfs</td><td></td></tr><tr><td></td><td></td><td>cfs</td><td></td></tr></tbody></table>	Intake Name	Water Body Type	Flow	People Served			cfs				cfs				cfs		0		
Intake Name	Water Body Type	Flow	People Served																
		cfs																	
		cfs																	
		cfs																	
Are any intakes part of a blended system? Yes <input type="checkbox"/> No <input type="checkbox"/> If yes, attach a page to show apportionment calculations.																			
ACTUAL CONTAMINATION TARGETS: If analytical evidence indicates that any drinking-water intake listed above has been exposed to a hazardous substance from the site, list the intake name and calculate the factor score based on the intake population from SI Table 8.																			
Level I: _____ people x 10 = _____ Level II: _____ people x 1 = _____ Total =	0																		
POTENTIAL CONTAMINATION TARGETS: Determine the number of people served by drinking-water intakes that have not been exposed to a hazardous substance from the site, and assign the total population score from SI Table 9.	0																		
NEAREST INTAKE: Assign a score of 50 for any Actual Contamination Targets. Assign a score of 45 if there are Level II targets but no Level I targets. If no Actual Contamination Targets exist, assign the nearest intake score from SI Table 9. If no drinking-water intakes exist, assign 0.	0																		
RESOURCES	5																		
T =	5																		

JUL 6 1991

SI TABLE 9: VALUES FOR POTENTIAL CONTAMINATION SURFACE WATER TARGET POPULATIONS

Surface Water Type / Flow (SI Table 11)	Population	Nearest Intake (choose highest)	Population Served by Intakes Within Flow Category												Population Value	Ref.
			1 to 30	31 to 100	101 to 300	301 to 1,000	1,001 to 3,000	3,001 to 10,000	10,001 to 30,000	30,001 to 100,000	100,001 to 300,000	300,001 to 1,000,000	1,000,001 to 3,000,000	3,000,001 to 10,000,000		
Less than 10 cfs		20	2	5	16	52	163	521	1,633	5,214	16,325	52,136	163,246	521,359		
10 to 100 cfs		2	1	1	2	5	16	52	163	521	1,633	5,214	16,325	52,136		
100 to 1,000 cfs		1	0	0	1	1	2	5	16	52	163	521	1,633	5,214		
1,000 to 10,000 cfs		0	0	0	0	0	1	1	2	5	16	52	163	521		
10,000 cfs or greater at Lakes		0	0	0	0	0	0	0	1	1	2	5	16	52		
3-mile Mixing Zone		10	1	3	8	26	82	261	816	2,607	8,162	26,068	81,623	260,680		
Nearest Intake =															Score =	

SI TABLE 10: SURFACE WATER TYPE / FLOW CHARACTERISTICS
WITH DILUTION WEIGHTS FOR POTENTIAL CONTAMINATION SURFACE WATER SENSITIVE ENVIRONMENTS

Type of Surface Water Body		Dilution Weight
Water Body Type	OR Flow	
minimal stream	< 10 cfs	1
small to moderate stream	10 to 100 cfs	0.1
moderate to large stream	> 100 to 1,000 cfs	N/A
large stream to river	> 1,000 to 10,000 cfs	N/A
large river	> 10,000 cfs	N/A
3-mile mixing zone of quiet flowing streams or rivers	10 cfs or greater	N/A
coastal tidal water (harbors, sounds, bays, etc.), ocean, or Great Lakes	N/A	N/A

SI TABLE 11: HUMAN FOOD CHAIN ACTUAL CONTAMINATION TARGETS

Fishery ID: Mill Creek Sample Type: Sediment Level I Level II

Sample ID	Hazardous Substance	Concentration (mg/kg)	Benchmark Concentration (FDAAL)	Percent of Benchmark	Cancer Risk Concentration	Percent of Cancer Risk Concentration	Reference Dose	Percent of Reference Dose
3/88 SED	COPPER	95.4	N.A.				1.3mg/l	
				Highest Percent		Sum of Percents		Sum of Percents

SI TABLE 12: SENSITIVE ENVIRONMENT ACTUAL CONTAMINATION TARGETS

Environment ID: N/A Sample Type: Level I Level II Environment Value

Sample ID	Hazardous Substance	Concentration (ug/L)	Benchmark Concentration (AWQC or AALAC)	Percent of Benchmark
			Highest Percent	

Environment ID: Sample Type: Level I Level II Environment Value

Sample ID	Contaminant	Concentration (ug/L)	Benchmark Concentration (AWQC or AALAC)	Percent of Benchmark
			Highest Percent	

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SURFACE WATER PATHWAY (continued)
HUMAN FOOD CHAIN THREAT WORKSHEET

17

HUMAN FOOD CHAIN THREAT TARGETS

8. Record the water body type and flow (if applicable) for each fishery within the target distance limit. If there is no fishery within the target distance limit, assign a score of 0 at the bottom of this page.

Fishery Name	Water Body Type	Flow
Mill Creek	Stream	10-100 cfs
Bushkill Brook	stream	10-100 cfs
So. Branch Raritan River	river	>1,000-10,000 cfs
Raritan River	river	>1,000-10,000 cfs

9. ACTUAL CONTAMINATION FISHERIES: If analytical evidence or direct observation indicates that any fishery listed above has been exposed to a hazardous substance from the site, record contaminant information on SI Table 11. Assign a score of 50 if there is a Level I fishery, or 45 for Level II.

10. POTENTIAL CONTAMINATION FISHERIES: If there is a release to a watershed containing fisheries within the target distance limit, but there are no Level I or Level II fisheries, assign a score of 21. If there is no observed release to the watershed, assign a value for potential contamination fisheries from the table below using the LOWEST flow at any fishery within the target distance limit.

Lowest Flow	Potential Fisheries Score
< 10 cfs	21
10 to 100 cfs	3
> 100 cfs, coastal tidal waters, oceans, or Great Lakes	1

T = 45

Score Data Type References

45

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Site Name:
Date:

SURFACE WATER PATHWAY (continued)
ENVIRONMENTAL THREAT WORKSHEET

18

ENVIRONMENTAL THREAT TARGETS

Score Data Type References

1. Record the water body type and flow (if applicable) for each surface water sensitive environment within the target distance limit (see SI Tables 13 and 14). If there is no sensitive environment within the target distance limit, assign a Targets score of 0 at the bottom of the page.

Environment Name	Water Body Type	Flow
So. Branch Baritan Wetlands	river	1,000-10,000 cfs
longtail salamander	Stream	10-100 cfs
		cfs
		cfs
		cfs

12. ACTUAL CONTAMINATION SENSITIVE ENVIRONMENTS: If sampling data or direct observation indicates any sensitive environment listed above has been exposed to a hazardous substance from the site, record this information on SI Table 12, and assign a factor score using the environment value from SI Table 13 or 14.

Environment Name	Environment Type and Value (SI Tables 13 or 14)	Multiplier (10 for Level I, 1 for Level II)	Product
	x	=	
	x	=	
	x	=	
	x	=	

13. POTENTIAL CONTAMINATION SENSITIVE ENVIRONMENTS:

- A. For Potentially Contaminated Sensitive Environments located on surface water bodies with flows of 100 cfs or less, assign scores as follows:

Flow	Dilution Weight (SI Table 10)	Environment Type and Value (SI Tables 13 or 14)	Product
10-100 cfs	0.1	50	x 0.1 =
cfs	x		x 0.1 =
cfs	x		x 0.1 =
cfs	x		x 0.1 =
cfs	x		x 0.1 =

Sum =

- B. If any Potentially Contaminated Sensitive Environment is located on coastal tidal waters, ocean, or great lakes, or a surface water body with flow greater than 100 cfs, assign a score of 1.

T =

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SI TABLE 13: SURFACE WATER AND AIR SENSITIVE ENVIRONMENTS VALUES

<i>Sensitive Environment</i>	<i>Assigned Value</i>
Critical habitat for Federally designated endangered or threatened species	100
Marine Sanctuary	
National Park	
Designated Federal Wilderness Area	
Ecologically important areas identified under the Coastal Zone Wilderness Act	
Sensitive Areas identified under the National Estuary Program or Near Coastal Water Program of the Clean Water Act	
Critical Areas Identified under the Clean Lakes Program of the Clean Water Act (subareas in lakes or entire small lakes)	
National Monument (air pathway only)	
National Seashore Recreation Area	
National Lakeshore Recreation Area	
Habitat known to be used by Federally designated or proposed endangered or threatened species	75
National Preserve	
National or State Wildlife Refuge	
Unit of Coastal Barrier Resources System	
Federal land designated for the protection of natural ecosystems	
Administratively Proposed Federal Wilderness Area	
Spawning areas critical for the maintenance of fish/shellfish species within a river system, bay or estuary	
Migratory pathways and feeding areas critical for the maintenance of anadromous fish species within river reaches or areas in lakes or coastal tidal waters in which the fish spend extended periods of time	
Terrestrial areas utilized by large or dense aggregations of vertebrate animals (semi-aquatic foragers) for breeding	
National river reach designated as recreational	
Habitat known to be used by State designated endangered or threatened species	50
Habitat known to be used by a species under review as to its Federal endangered or threatened status	
Coastal Barrier (partially developed)	
Federally designated Scenic or Wild River	
State land designated for wildlife or game management	25
State designated Scenic or Wild River	
State designated Natural Area	
Particular areas, relatively small in size, important to maintenance of unique biotic communities	
State designated areas for the protection or maintenance of aquatic life under the Clean Water Act	5
Wetlands	See SI Table 15 (Surface Water Pathway) or SI Table 20 (Air Pathway)

SI TABLE 14: SURFACE WATER
WETLANDS FRONTAGE VALUES

<i>Total Length of Wetlands</i>	<i>Assigned Value</i>
Less than 0.1 mile	10
0.1 to 1 mile	25
Greater than 1 to 2 miles	50
Greater than 2 to 3 miles	75
Greater than 3 to 4 miles	100
Greater than 4 to 8 miles	150
Greater than 8 to 12 miles	250
Greater than 12 to 16 miles	350
Greater than 16 to 20 miles	450
Greater than 20 miles	500

Site Name:

Date:

SURFACE WATER PATHWAY (concluded) WASTE CHARACTERISTICS, THREAT, AND PATHWAY SCORE SUMMARY

20

WASTE CHARACTERISTICS

Score

- A. If any Actual Contamination Target exists for the surface water pathway (pages, 14, 18, or 17), assign the hazardous waste quantity score calculated on page 4, or a score of 100, whichever is GREATER.
- B. If there is no Actual Contamination Target for the surface water pathway, assign the hazardous waste quantity score calculated on page 4.

10

- Assign the highest value from SI Table 3 or 7 for the hazardous substance factors listed below. Multiply each by the surface water waste quantity score, and determine the waste characteristics score for each threat using the table below.

	Substance Value	Hazardous Waste Quantity	Product	WC Score (from table)
Drinking Water Threat Toxicity/Persistence	100	10	1000	6 (maximum of 100)
Food Chain Threat Toxicity/Persistence/Bioaccumulation	5x10 ⁶	100	5x10 ⁸	100 (maximum of 1,000)
Environmental Threat Ecotoxicity/Persistence/ Ecobioaccumulation	5x10 ⁶	10	5x10 ⁷	56 (maximum of 1,000)

Product	WC Score	Product	WC Score
0	0	1E+06 to <1E+07	32
>0 to <10	1	1E+07 to <1E+08	56
10 to <100	2	1E+08 to <1E+09	100
100 to <1,000	3	1E+09 to <1E+10	180
1,000 to <10,000	6	1E+10 to <1E+11	320
10,000 to <1E+05	10	1E+11 to <1E+12	560
1E+05 to <1E+06	18	1E+12 or greater	1000

SURFACE WATER PATHWAY THREAT SCORES

Threat	Likelihood of Release (LR) Score (from page 13)	Targets (T) Score (pages 13, 16, or 17)	Pathway Waste Characteristics (WC) Score (determined above)	Threat Score LR x T x WC/82,500 (maximum of 100)
Drinking Water	550	5	6	0.2 (maximum of 100)
Human Food Chain	550	45	100	30 (maximum of 100)
Environmental	560	.5	56	0.19 (maximum of 60)

SURFACE WATER PATHWAY SCORE
(Drinking Water Threat + Human Food Chain Threat + Environmental Threat)

30.39

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Site Name:
Date:

SOIL EXPOSURE PATHWAY WORKSHEET

22

LIKELIHOOD OF EXPOSURE

Score Data Type References

1. OBSERVED CONTAMINATION: If evidence indicates presence of surficial contamination (depth of 2 feet or less), assign a score of 550; otherwise, assign 0. Note that a likelihood of exposure score of 0 results in a soil exposure score of 0 (page 23).

550

LE = 550

RESIDENT POPULATION THREAT TARGETS

2. RESIDENT POPULATION: Determine the number of people occupying residences or attending school or daycare on or within 200 feet of areas of surficial contamination. Calculate the concentration level on SI Table 15 and enter the number of people:

Level I: _____ people x 10 = _____

Level II: _____ people x 1 = _____ Total = 0

3. RESIDENT INDIVIDUAL: Assign a score of 50 if any Level I resident population exists. Assign a score of 45 if there are Level II targets but no Level I targets. If no resident population exists, assign 0.

0

4. WORKERS: Assign a score from the table below for the total number of workers at the site and nearby facilities with areas of surficial contamination associated with the site:

Number of Workers	Score
0	0
1 to 100	5
101 to 1,000	10
> 1,000	15

5

5. TERRESTRIAL SENSITIVE ENVIRONMENTS: Use SI Table 16 to assign a value for each terrestrial sensitive environment on an area of surficial contamination:

Terrestrial Sensitive Environment Type	Value
_____	_____
_____	_____
_____	_____
_____	_____

Sum = 0

6. RESOURCES

0

T = 5

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NOV 6 1998

Site Name:
Date:

SOIL EXPOSURE PATHWAY WORKSHEET (continued)

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WASTE CHARACTERISTICS

7. Assign the hazardous waste quantity score calculated on page 4.
8. Assign the highest toxicity value from SI Table 15.
9. Multiply the toxicity and waste quantity scores. Assign the Waste Characteristics score from the table below:

10	
100	
WC = 6	

Product	WC Score	Product	WC Score
0	0	10,000 to <1E+0	10
>0 to <10	1	1E+05 to <1E+0	18
10 to <100	2	1E+06 to <1E+0	32
100 to <1,000	3	1E+07 to <1E+0	56
1,000 to <10,000	6	1E+08 or greater	100

RESIDENT POPULATION THREAT SCORE:

$$\frac{LE \times T \times WC}{82,500} =$$

.2

NEARBY POPULATION THREAT SCORE:

Population within one mile: 3,335

1

SOIL EXPOSURE PATHWAY SCORE:

Resident Population Threat + Nearby Population Threat

1.2

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SI TABLE 16: SOIL EXPOSURE PATHWAY
TERRESTRIAL SENSITIVE ENVIRONMENT VALUES

<i>Terrestrial Sensitive Environment</i>	<i>Assigned Value</i>
terrestrial critical habitat for Federally designated endangered or threatened species	100
National Park Designated Federal Wilderness Area National Monument	
terrestrial habitat known to be used by Federally designated or proposed threatened or endangered species	75
National Preserve (terrestrial) Federal or State terrestrial Wildlife Refuge Land designated for protection of natural ecosystems Administratively proposed Federal Wilderness Area	
terrestrial areas utilized by large or dense aggregations of animals (vertebrate species) for breeding	50
terrestrial habitat used by State designated endangered or threatened species	
terrestrial habitat used by species under review for Federally designated endangered or threatened status	25
lands designated for wildlife or game management	
Designated Natural Areas	
Small areas, relatively small in size, important to maintenance of unique biotic communities	

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SI TABLE 17: AIR PATHWAY OBSERVED RELEASE SUBSTANCES

Sample ID: _____

Level 1 _____

Level II _____

Distance from Source (mi) 07

Hazardous Substance	Concentration (ug/m3)	Toxicity/Mobility	Benchmark Concentration <small>(NAAQS or NESHAPs)</small>	Percent of Benchmark	Cancer Risk Concentration	Percent of Cancer Risk Concentration	Reference Dose	Percent of Reference Dose	Reference
Copper		2	0		0		0		
	Highest Toxicity/Mobility		Highest Percent		Sum of Percents		Sum of Percents		

Sample ID: _____

Level 1 _____

Level II _____

Distance from Source (mi) _____

Hazardous Substance	Concentration ($\mu\text{g}/\text{m}^3$)	Toxicity/Mobility	Benchmark Concentration (INAAQS or NESHAPs)	Percent of Benchmark	Cancer Risk Concentration	Percent of Cancer Risk Concentration	Reference Dose	Percent of Reference Dose	Reference
	Highest Toxicity/Mobility		Highest Percent		Sum of Percents		Sum of Percents		

Sample ID: _____

Level 1 _____

Level II _____

Distance from Source (mi) _____

Sample ID: _____									Reference
	Concentration (ug/m3)	Toxicity/ Mobility	Benchmark Concentration (NAAQS or NESHAPs)	Percent of Benchmark	Cancer Risk Concentration	Percent of Cancer Risk Concentration	Reference Dose	Percent of Reference Dose	
	Highest Toxicity/Mobility		Highest Percent		Sum of Percents		Sum of Percents		

AIR PATHWAY WORKSHEET

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LIKELIHOOD OF RELEASE

LIKELIHOOD OF RELEASE		
1. OBSERVED RELEASE: If sampling data or direct observation support a release to air, assign a score of 550. Record observed release substances on SI Table 17.	550	
2. NO OBSERVED RELEASE: If sampling data do not support a release to air, assign a score of 500.		
LR =	550	

TARGETS

3. **ACTUAL CONTAMINATION POPULATION:** Determine the number of people subject to exposure from a release of a hazardous substance to the air. Calculate levels of exposure on SI Table 17.

Level I: 0 people x 10 = 0
 Level II: 35 people x 1 = 3 *Total*
4. **POTENTIAL TARGET POPULATION:** Determine the number of people not subject to exposure from a release of a hazardous substance to the air, and assign the total population score from SI Table 18.
5. **NEAREST INDIVIDUAL:** Assign a score of 50 if there are any Level I targets. Assign a score of 45 if there are Level II targets but no Level I targets. If no Actual Contamination Population exists, assign the Nearest Individual score from SI Table 18.
6. **ACTUAL CONTAMINATION SENSITIVE ENVIRONMENTS:** Sum the sensitive environment values (SI Table 13) and wetland acreage values (SI Table 19) for environments subject to exposure from the release of a hazardous substance to the air.

<i>Sensitive Environment Type</i>	<i>Value</i>

<i>Wetland Acreage</i>	<i>Value</i>

Sum =

7. **POTENTIAL CONTAMINATION SENSITIVE ENVIRONMENTS:** Use SI Table 20 to determine the score for sensitive environments not subject to exposure from a release.
8. **RESOURCES**

T =

SI TABLE 18: VALUES FOR POTENTIAL CONTAMINATION AIR TARGET POPULATIONS

Distance from Site	Population	Nearest Individual (choose highest)	Population Within Distance Category												Population Value	Ref.
			1 to 10	11 to 30	31 to 100	101 to 300	301 to 1,000	1,001 to 3,000	3,001 to 10,000	10,001 to 30,000	30,001 to 100,000	100,001 to 300,000	300,001 to 1,000,000	1,000,001 to 3,000,000		
On a source	—	20	1	2	5	16	52	163	521	1,633	5,214	16,325	52,136	163,246	—	—
>0 to ¼ mile	—	20	1	1	1	4	13	41	130	408	1,303	4,081	13,034	40,811	3	—
> ¼ to ½ mile	312	2	0	0	1	1	3	9	28	88	282	882	2,815	8,815	3	—
> ½ to 1 mile	2574	1	0	0	0	1	1	3	8	26	83	261	834	2,612	3	—
> 1 to 2 miles	6502	0	0	0	0	0	1	1	3	8	27	83	266	833	1	—
> 2 to 3 miles	5169	0	0	0	0	0	1	1	1	4	12	38	120	376	2	—
> 3 to 4 miles	10,576	0	0	0	0	0	0	1	1	2	7	23	73	229	2	—
Score =															12	—

Nearest Individual =

SI TABLE 19: AIR PATHWAY VALUES FOR WETLAND AREA

Wetland Area	Assigned Value
Less than 1 acre	0
1 to 50 acres	25
Greater than 50 to 100 acres	75
Greater than 100 to 150 acres	125
Greater than 150 to 200 acres	175
Greater than 200 to 300 acres	250
Greater than 300 to 400 acres	350
Greater than 400 to 500 acres	450
Greater than 500 acres	500

SI TABLE 20: DISTANCE WEIGHTS AND CALCULATIONS FOR AIR PATHWAY POTENTIAL CONTAMINATION SENSITIVE ENVIRONMENTS

Distance	Distance Weight	Sensitive Environment Type and Value (from SI Tables 14 and 20)	Product
Onsite	0.10	x	
		x	
0-1/4 mi	0.025	x	
		x	
		x	
1/4-1/2 mi	0.0054	x	
		x	
		x	
		x	

Total Environments Score =

Site Name:

Date:

AIR PATHWAY (concluded)

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WASTE CHARACTERISTICS

If any Actual Contamination Targets exist for the air pathway, assign the hazardous waste quantity score calculated on page 4, or a score of 100, whichever is GREATER; if there are no Actual Contamination Targets for the air pathway, assign the hazardous waste quantity score calculated on page 4.

Assign the highest air toxicity/mobility value from SI Table 3 or 17.

Multiply the air pathway toxicity/mobility and waste quantity scores. Assign the Waste Characteristics score from the table below:

Product	WC Score	Product	WC Score
0	0	10,000 to <1E+0	10
>0 to <10	1	1E+05 to <1E+0	18
10 to <100	2	1E+06 to <1E+0	32
100 to <1,000	3	1E+07 to <1E+0	56
1,000 to <10,000	6	1E+08 or greater	100

WC = 3

PATHWAY SCORE

$$\frac{LE \times T \times WC}{82,500} =$$

1.84

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10/1/2001

Site Name:

Date:

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SITE SCORE CALCULATION

	S	S ²
GROUND WATER PATHWAY SCORE (S _{gw}):	33.07	1,093.62
SURFACE WATER PATHWAY SCORE (S _{sw}):	30.39	923.55
SOIL EXPOSURE PATHWAY SCORE (S _{se}):	1.2	1.44
AIR PATHWAY SCORE (S _a):	1.84	3.39
SITE SCORE: $\sqrt{\frac{S_{gw}^2 + S_{sw}^2 + S_{se}^2 + S_a^2}{4}}$ =		22.48

RECOMMENDATION

COMMENTS